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(54) METHOD FOR SELECTING CONNECTION DESTINATION OF RADIO LAN

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a connection destination selecting method for a radio LAN which enables selection of a desired connection device among a plurality of connection devices existing within the communication range of a device to be connected and enables communication with the desired connection device.

SOLUTION: Identification information about a shape and a name for specifying the connection device (electronic camera 10) is displayed on the displays means 46 of a communication terminal 40 being the device to be connected. When the desired connection device is designated from among the display 45, the connection device and the terminal 40 are made to automatically establish communication. Thus, it is possible to select and communicate with the desired connection device from the plurality of connection devices existing within the

communication range of the terminal 40.

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CLAIMS

[Claim(s)]

[Claim 1] It is the connection place selection approach of the wireless LAN which consists of the connection device in which radio is possible, and the connected device equipped with the display means and the assignment means while being able to radiocommunicate to this connection device. If said connected device and said connection device go into a radio within the circle, a communication link will be started automatically. If said connected device receives the identification information which can specify this connection device from said connection device, and displays the identification information which identifies a connection device on the display means of said connected device and a desired connection device is specified out of this display The connection place selection approach of the wireless LAN characterized by establishing the wireless connection between this connection device and said connected device.

[Claim 2] The connection place selection approach of the wireless LAN of claim

1 which will be characterized by interrupting the communication link with this connection device and said connected device henceforth if the identification information which specifies the connection device which can communicate as the display means of said connected device is displayed and a desired connection device is specified out of this display.

[Claim 3] The connection place selection approach of the wireless LAN characterized by to establish the wireless connection between said connection device and said connected device according to how of the key which is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device, and is prepared in said connection device, and the key which are prepared in said connected device to push.

[Claim 4] The connection place selection approach of the wireless LAN which will be characterized by to establish the wireless connection between said connection device and said connected device if it is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device and the predetermined key prepared in said connection device and the predetermined key which are prepared in said

connected device press mostly at a coincidence term.

[Claim 5] The connection place selection approach of the wireless LAN which will carry out [establishing the wireless connection between said connection device and said connected device, and] as the description if it pushes in order of predetermined [which was able to define beforehand the predetermined key which is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device, and is prepared in said connection device, and the predetermined key which are prepared in said connected device].

[Claim 6] The connection place selection approach of the wireless LAN which will be characterized by to establish the wireless connection between said connection device and said connected device if said connected device receives the sound of the connection device proper which is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device, and emits from said connection device.

[Claim 7] It is the connection place selection approach of the wireless LAN which consists of the connection device in which radio and photography are possible, and the connected device equipped with the display means while being able to

radiocommunicate to this connection device. The connection place selection approach of the wireless LAN characterized by said connection device photoing the display currently displayed on the display means of said connected device, and detecting the contents of a display of a connected device, and establishing a connected device and wireless connection when these contents of a display are the predetermined contents of a display.

[Claim 8] While being able to radiocommunicate to the connection device in which radio, vibration, or detection of impulsive sound is possible, and this connection device, when it is the connection place selection approach of the wireless LAN which consists of the connected device in which vibration or detection of impulsive sound is possible and said connection device and said connected device contact, said connection device and said connected device are the connection place selection approach of wireless LAN of carrying out recognizing mutual and wireless connection being established as the description.

[Claim 9] While being able to radiocommunicate to the connection device in which radio is possible, and this connection device, a sound, After it is the connection place selection approach of the wireless LAN which consists of the connected device equipped with the notice means which emits light or vibration, it will establish wireless connection automatically if said connection device and said connected device go into the within the circle one which can be

communicated, and establishment of this wireless connection is completed The connection place selection approach of the wireless LAN characterized by notifying a user of having emitted a sound, light, or vibration from the notice means formed in the connected device, and wireless connection having been established.

[Claim 10] It is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device. If said connection device and said connected device go into the within the circle one which can be communicated, a communication link will be started automatically. The common key information which it uses for authentication to said connection device in being the 1st connection is transmitted. Detect that the common key prepared in said connection device and the common key prepared in said connected device were pressed, and wireless connection is established. The predetermined key information that it uses for authentication to said connection device in being the 2nd connection is transmitted. A communication link is continued as information which detects that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed, and recognizes a user. The connection place selection approach of the wireless LAN characterized by continuing a communication link

while detecting that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed and recognizing a user, in being connection of the 3rd henceforth.

[Claim 11] It is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device. Said connection device and said connected device attest mutual with going into the within the circle one which can be communicated automatically, and wireless connection is established. Mutual authentication The first-time mode made once into a limitation, The connection place selection approach of the wireless LAN characterized by the ability of an assignment means to the user for whom it was prepared by the connected device to specify the mode in which 2nd henceforth performs mutual authentication.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the connection place selection

approach of wireless LAN, especially relates to the connection place selection approach of the wireless LAN in which two or more connection devices and informational transmission are possible by wireless.

[0002]

[Description of the Prior Art] the cordless handset of PHS -- information required when performing radio between comrades, without minding a main phone -- two cordless handsets -- the mutual registration approach of the information which can be registered in between is shown in the official report of JP,9-182156,A.

[0003] Moreover, the telephone equipment with which the name of the phase hand who received by telephone can become clear easily is shown in the official report of JP,5-167669,A.

[0004]

[Problem(s) to be Solved by the Invention] However, by the registration approach of the information shown in the official report of JP,9-182156,A, it being able to register only by the communication link of 1 to 1 and the communication link port of infrared ray communication needed to be prepared.

[0005] Moreover, with the telephone equipment shown in the official report of JP,5-167669,A, it is only searching and displaying the partner name corresponding to the received telephone number, and also the authentication between telephones supports only the communication link of 1 to 1 while it is

impossible.

[0006] This invention was made in view of such a situation, and aims at offering the connection place selection approach of the wireless LAN which a desired connection device is chosen and can be communicated from two or more connection devices which exist in the communication link within the circle of a connected device.

[0007]

[Means for Solving the Problem] In order to attain said purpose invention according to claim 1 It is the connection place selection approach of the wireless LAN which consists of the connection device in which radio is possible, and the connected device equipped with the display means and the assignment means while being able to radiocommunicate to this connection device. If said connected device and said connection device go into a radio within the circle, a communication link will be started automatically. If said connected device receives the identification information which can specify this connection device from said connection device, and displays the identification information which identifies a connection device on the display means of said connected device and a desired connection device is specified out of this display It is characterized by establishing the wireless connection between this connection device and said connected device.

[0008] According to this invention, if a connected device and a connection device go into a radio within the circle, a communication link will be started automatically. Said connected device receives the identification information which can specify this connection device from said connection device. Since the wireless connection between this connection device and said connected device was established when the identification information which identifies a connection device was displayed on the display means of said connected device and the desired connection device was specified out of this display It becomes possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate.

[0009] In order to attain said purpose, invention according to claim 3 is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device, and is carrying out that the wireless connection between said connection device and said connected device is established as the description according to how of the key prepared in said connection device, and the key which are prepared in said connected device to push.

[0010] Since the wireless connection between said connection device and said

connected device was established according to how of the key prepared in the connection device, and the key prepared in the connected device to push according to this invention, it becomes that it is possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate.

[0011] In order to attain said purpose invention according to claim 4 The connection device in which radio is possible, and the predetermined key which is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to this connection device, and is prepared in said connection device, If the predetermined key prepared in said connected device is pressed mostly at a coincidence term, it is characterized by establishing the wireless connection between said connection device and said connected device.

[0012] Since the wireless connection between said connection device and said connected device was established when the predetermined key prepared in the connection device and the predetermined key prepared in the connected device were pressed mostly at the coincidence term according to this invention, it becomes that it is possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate.

[0013] In order to attain said purpose invention according to claim 5 It is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device. If it pushes in order of predetermined [which was able to define beforehand the predetermined key prepared in said connection device, and the predetermined key prepared in said connected device], it is characterized by establishing the wireless connection between said connection device and said connected device.

[0014] Since the wireless connection between said connection device and said connected device was established when pushed in order of predetermined [which was able to define beforehand the predetermined key prepared in the connection device, and the predetermined key prepared in the connected device] according to this invention, a desired connection device chooses from two or more connection devices which exist in the communication link within the circle of a connected device, and it becomes that it is possible in communicating.

[0015] If said connected device receives the sound of the connection device proper which invention according to claim 6 is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device, and emits from said connection device in order to attain said

purpose, it is carrying out establishing the wireless connection between said connection device and said connected device as the description.

[0016] Since the wireless connection between said connection device and said connected device was established when the connected device received the sound of the connection device proper emitted from a connection device according to this invention, it becomes that it is possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate.

[0017] In order to attain said purpose invention according to claim 7 It is the connection place selection approach of the wireless LAN which consists of the connection device in which radio and photography are possible, and the connected device equipped with the display means while being able to radiocommunicate to this connection device. Said connection device photos the display currently displayed on the display means of said connected device, and the contents of a display of a connected device are detected, and when these contents of a display are the predetermined contents of a display, it is characterized by establishing a connected device and wireless connection.

[0018] Since a connection device photoed the display currently displayed on the display means of a connected device, the contents of a connected device of a display detected, and a connected device and wireless connection established

according to this invention when these contents of a display are the predetermined contents of a display, it becomes that it is possible in choosing and communicating a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device.

[0019] In order to attain said purpose invention according to claim 8 It is the connection place selection approach of the wireless LAN which consists of the connected device in which vibration or detection of impulsive sound is possible while being able to radiocommunicate to the connection device in which radio, vibration, or detection of impulsive sound is possible, and this connection device. If said connection device and said connected device are contacted, said connection device and said connected device are characterized by recognizing mutual and establishing wireless connection.

[0020] According to this invention, if a connection device and a connected device are contacted, since said connection device and said connected device recognize mutual and established wireless connection, they will become possible [choosing a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and communicating].

[0021] In order to attain said purpose invention according to claim 9 While being

able to radiocommunicate to the connection device in which radio is possible, and this connection device, a sound, After it is the connection place selection approach of the wireless LAN which consists of the connected device equipped with the notice means which emits light or vibration, it will establish wireless connection automatically if said connection device and said connected device go into the within the circle one which can be communicated, and establishment of this wireless connection is completed It is characterized by notifying a user of having emitted a sound, light, or vibration from the notice means formed in the connected device, and wireless connection having been established.

[0022] After according to this invention it will establish wireless connection automatically if a connection device and a connected device go into the within the circle one which can be communicated, and establishment of this wireless connection is completed Since the user was notified of having emitted a sound, light, or vibration from the notice means formed in the connected device, and wireless connection having been established, it becomes possible to get to know easily that the desired connection device was chosen from two or more connection devices which exist in the communication link within the circle of a connected device.

[0023] In order to attain said purpose invention according to claim 10 It is the connection place selection approach of the wireless LAN which consists of the

connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device. If said connection device and said connected device go into the within the circle one which can be communicated, a communication link will be started automatically. The common key information which it uses for authentication to said connection device in being the 1st connection is transmitted. Detect that the common key prepared in said connection device and the common key prepared in said connected device were pressed, and wireless connection is established. The predetermined key information that it uses for authentication to said connection device in being the 2nd connection is transmitted. A communication link is continued as information which detects that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed, and recognizes a user. In being connection of the 3rd henceforth, while detecting that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed and recognizing a user, it is characterized by continuing a communication link.

[0024] According to this invention, if a connection device and a connected device go into the within the circle one which can be communicated, a communication link will be started automatically. The common key information which it uses for authentication to said connection device in being the 1st connection is

transmitted. Detect that the common key prepared in said connection device and the common key prepared in said connected device were pressed, and wireless connection is established. The predetermined key information that it uses for authentication to said connection device in being the 2nd connection is transmitted. A communication link is continued as information which detects that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed, and recognizes a user. Since the communication link was continued while detecting that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed and having recognized the user, when it is connection of the 3rd henceforth It becomes possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device easily, and to communicate.

[0025] In order to attain said purpose invention according to claim 11 It is the connection place selection approach of the wireless LAN which consists of the connected device which can radiocommunicate to the connection device in which radio is possible, and this connection device. Said connection device and said connected device attest mutual with going into the within the circle one which can be communicated automatically, and wireless connection is

established. Mutual authentication The first-time mode made once into a limitation, 2nd henceforth is characterized by the ability of a user to specify from an assignment means by which the mode in which mutual authentication was performed was formed by the connected device.

[0026] According to this invention, a connection device and a connected device attest mutual with going into the within the circle one which can be communicated automatically, and wireless connection is established. Mutual authentication The first-time mode made once into a limitation, Since it carried out as [specify / 2nd henceforth / from an assignment means by which the mode in which mutual authentication was performed was formed by the connected device / a user] While becoming possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate, it becomes possible to prevent an unnecessary communication link.

[0027]

[Embodiment of the Invention] According to an accompanying drawing, it explains in full detail about the gestalt of desirable operation of the connection place selection approach of the wireless LAN concerning this invention below.

[0028] Drawing 1 is the perspective view of the electronic camera which is the radio terminal and the connection device in which wireless connection is

possible which are a connected device.

[0029] According to this drawing, the release carbon button 2 and the taking lens 4 are formed in the transverse plane of an electronic camera 10.

[0030] Drawing 2 is the rear view of the electronic camera shown in drawing 1 .

[0031] According to this drawing, the mode switch dial 6 which switches each mode, such as photography of an electronic camera 10, a display, and a communication link, the cross-joint key 8 which directs migration and communication link initiation of the cursor currently displayed on the display means 32, the finder 9, and the display means 32 are formed in the tooth back of an electronic camera 10.

[0032] Drawing 3 is the block diagram of the electronic camera 10 shown in drawing 1 .

[0033] An image pick-up means 12 to make a light-receiving side carry out image formation of the image of a photographic subject to an electronic camera 10, to carry out photo electric conversion to it, and to output as image data, While performing control of the buzzer 13 and electronic camera 10 whole, the sampling timing control of image data, The information processing means 14 which controls record control of image data, image measuring of image data, flashing recognition of image data, reading of the model information on this electronic camera 10, communications control, a display control, etc., An

oscillating detection means 15 to detect a change and acceleration of vibration which joins an electronic camera 10, An image-processing means 16 to process modification of image size, sharpness amendment, a gamma correction, contrast amendment, white balance amendment, etc., An input means 19 by which the frame memory 18 which memorizes image data temporarily, the release carbon button 2, a communication link carbon button, a transmitting carbon button and a function switch, the cross-joint key 8, the definite switch, the mode transfer switch, etc. are prepared, A compression defrosting means 20 to perform processing which carries out elongation expansion control of the data which carried out compression control of the information, such as image data, by the technique represented by JPEG and Motion-JPEG, or were compressed, In order to record image data on the removable record medium 22 or to read it, the record-medium interface 24 which changes data is established. A record medium 22 is a removable record medium represented by semi-conductors, such as memory card and MO, magnetic recording, and optical recording.

[0034] The memory 26 constituted by ROM a program of operation and each constant are remembered to be, and RAM which is a storage means used as the working area at the time of program execution is connected to the information processing means 14.

[0035] The radio means of the electronic camera 10 used when transmitting and

receiving data, such as an image, with an external device by communication link consists of a transceiver means 28 to put image data on a subcarrier by the command from the information processing means 14, and to transmit or receive, and an antenna 30 which transmit and receive a subcarrier and data.

[0036] Moreover, the character generator 36 changed into the data of D/A converter 34 for displaying image data on the display means 32, and the alphabetic character which displays the code information by which it is ordered from the information processing means 14 and a message is formed in the electronic camera 10.

[0037] Photography processing of the electronic camera 10 constituted as above-mentioned is explained.

[0038] Image formation of the image to photo is carried out to the light-receiving side of the image pick-up means 12, photo electric conversion of the photographic subject image which carried out image formation is carried out, and it is outputted to the image-processing means 16. Thus, magnification and reduction processing of a noise are carried out with the image-processing means 16, and the obtained image data is temporarily memorized to a frame memory 18. The information processing means 14 transmits serially the image data memorized by said frame memory 18 to D/A converter 34, and shows it for the display means 32.

[0039] If the release carbon button 2 prepared in the input means 19 is pushed, it will go into the mode which photos a photographic subject. Then, the information processing means 14 outputs the command which transmits the image data memorized by the frame memory 18 to the compression defrosting means 20, and carries out compression processing of image data on condition that predetermined. And processing which records image data on a record medium 22 one by one to the record-medium interface 24 is performed. Moreover, if the transmitting carbon button which establishes a communication terminal and a communication link and is prepared in the input means 19 is pushed, the information processing means 14 reads the specified image data from a record medium 22 one by one, and after changing into a predetermined data format, it will perform processing transmitted to an external communication terminal through the transceiver means 28 and an antenna 30.

[0040] Drawing 4 is the external view of the communication terminal which is a connected device.

[0041] The antenna 42 for a communication terminal 40 to radiocommunicate with a public line, as shown in this drawing, The radio means 44 for radiocommunicating with a connection device, and a display means 46 to display communication link information and display 45, It consists of the assignment means 48 and 48 -- which specify assignment and selection of the

telephone number, an alphabetic character, an image, and audio data, output equipment, the address of said data, etc., a loudspeaker 50 which outputs a sound while becoming the earphone of a telephone, and a microphone 52 which inputs voice and impulsive sound.

[0042] <A HREF="/Tokujitu/tjitemdrw.ipdl?N0000=237&N0500=1E_N/;<>;;898///&N0001=330&N0552=9&N0553=000007" TARGET="tjitemdrw">> drawing 5 is the block diagram of the communication terminal which is a connected device.

[0043] According to this drawing, the transceiver part of a communication terminal 40 consists of the radio means 54 for public lines for radiocommunicating with a public line, a transceiver means 56 for public lines, the radio means 44 for radiocommunicating with a connection device and the transceiver means 58, and a transceiver buffer 60 in which the data transmitted and received on real time are stored temporarily.

[0044] Moreover, RAM66 which is a storage means used as the working area at the time of PROM64 and CPU62 in which the information about the address of a program, various constants, the telephone number, and a communication link place, and the appearance and name of article of a connection device which operate CPU62 and CPU62 which control the whole communication terminal 40, and which make wireless connection etc. is written performing processing is

formed.

[0045] Each circumference circuit including CPU62 in a communication terminal 40, and the display means 46 and the assignment means 48 is connected by means of communications, such as a bus line and I/O, and CPU62 can control each circumference circuit. Moreover, CPU62 can perform control which blinks the graphic form currently displayed on the display means 46, an alphabetic character, and a back light.

[0046] The means of communications of the radio means 44 is the means of communications which used light, such as an electric wave, a supersonic wave, and infrared radiation. You may be based on the specification of "Bluetooth" which attracts attention in recent years when using an electric wave, and wireless LAN (Local Area Network), and when using infrared radiation, it may be based on the specification of IrDA.

[0047] In addition, although the example which used the electronic camera as a connection device explained in the above-mentioned explanation, as long as a connection device is a device equipped with the display means, the storage means, the output means, etc., they may be a personal computer, a camera, a printer, etc. Moreover, communication terminals may be mobile communication objects generally used, such as a cellular phone and PHS, and may be devices, such as an electronic camera and a printer.

[0048] The flow chart of the program at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 6 is shown.

[0049] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to step S100 "START" (it abbreviates to S100 henceforth and indicates). In the following S102 "search mode initiation", the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started.

[0050] If the retrieval signal with which the electronic camera 10 was outputted from the communication terminal 40 by decision of S104 "those connectable with a device" is received, an electronic camera 10 starts reception and the processing for newly joining a communication network and performing a connection handshake in the address of a proper from a communication terminal 40, in order to establish a communication link. Information, such as communicating for the display means 32 at this time, a partner's connection device, and a device name of a communication terminal, may be displayed, and a user may do selection assignment of the desired device from this inside.

[0051] In S106 "connection-confirm reception", processing which waits to transmit the "connection-confirm" signal over an electronic camera 10 by wireless from a communication terminal 40 is performed. When a "connection confirm" is not transmitted, the loop formation of S106 is carried out, and when the "connection confirm" has been transmitted, it progresses to the following decision of S108 "** key push."

[0052] In the following S108 "** key push", it judges whether the "** key" of the cross-joint key 8 prepared in the input means 19 of an electronic camera 10 was pressed. When it is judged that the "** key" is not pressed, it progresses to S110 "a key-less reply", and a letter is answered in the command which shows that the "** key" is not pressed to a communication terminal 40. And it progresses to S118 "END."

[0053] Moreover, when it is judged that the "** key" was pressed by S108, it progresses to S112 "carry out a key press and answer a letter", and the command which shows that the "** key" was pressed to the communication terminal 40 is transmitted. And by the following decision of S114 "connection authorization reception", when "connection authorization" is not received from a communication terminal 40, loop-formation processing which returns to S114 again is performed, when "connection authorization" is received from a communication terminal 40, it progresses to the following S116 "authentication

procedure", and the communication link about authentication procedure is carried out. And communication link connection processing with a communication terminal 40 is completed by S118 "END", and it returns to the original program routine.

[0054] On the other hand, in the processing program of a communication terminal 40, an electronic camera 10 and a communication terminal 40 recognize this to go into a communication link within the circle to each other, and the program of a communication terminal 40 branches to S120 "START." In the following S122 "search mode initiation", CPU62 emits the electric wave which includes a retrieval signal from the radio means 44, and starts the processing which looks for a connection device. At this time, information, such as information, such as a device name of the electronic camera 10 which is communicating, and a connection device name which exists in other communication link within the circle possible [a communication link], may be displayed, and a user may do selection assignment of the desired communications partner out of this.

[0055] If the retrieval signal with which the communication terminal 40 was outputted from the electronic camera 10 by decision of S124 "those connectable with a device" is received, in order to establish a communication link, a communication terminal 40 recognizes the communication terminal 40 which

joined a new communication network, distributes the address of a proper, and starts the processing for performing a connection handshake.

[0056] In decision of S126 "** key push", it judges whether the "** key" of the cross-joint key 8 prepared in the assignment means 48 was pressed. When the "** key" is not pressed, the loop formation of S126 is carried out, and when the "** key" is pressed, it progresses to the following S128 "connection-confirm transmission."

[0057] In the following S128, the command "a connection confirm" which shows that a communication link is established from a communication terminal 40 to an electronic camera 10 by wireless is transmitted, and it progresses to the following S130 "carry out a key press and receive." In S130, it judges whether the "** key" of a communication terminal 40 and the "** key" of an electronic camera 10 were pushed on coincidence. When the command which shows that the "** key" is not pressed with an electronic camera ten S110 "a key-less reply" is transmitted and a communication terminal 40 receives this, it branches from S130 to S136 "END", and this subroutine is ended.

[0058] Moreover, when the command which shows that the "** key" is pressed with the electronic camera ten S112 "carry out a key press and answer a letter" is transmitted and a communication terminal 40 receives this, it progresses to S132 "connection authorization transmission" from S130. In the following S132

"connection authorization transmission", the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, and establish mutual authentication by S134 "authentication procedure."

[0059] If the above-mentioned authentication procedure is completed, connection processing with an electronic camera 10 will be completed by S136 "END", and it returns to the original program routine.

[0060] The "** key" of the cross-joint key prepared in the communication terminal 40 as mentioned above, A communication terminal 40 transmits an inquiry whether the key was pressed to the connection device which exists in connection within the limits by radio by pressing at coincidence the "** key" of the cross-joint key 8 prepared in the electronic camera 10. A communication link is establishable, while performing procedure of mutual recognition and recognizing mutual, if the reply of the purport on which the key was pushed is received from a connection device side. Moreover, the key to operate is good also as a command which is not limited to the "** key", presses keys which are different when it was one or more predetermined actuation keys, and performs mutual recognition.

[0061] The flow chart of the gestalt of other operations at the time of an

electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 7 is shown.

[0062] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to S200 "START." In the following S202 "key setting initiation", the processing which sets up the sequence of pressing the key equivalent to ID used in order that a user may specify a connection device and may establish a communication link is started. At this time, the setting meaning, the setting approach, and a procedure may be displayed on the display means 32, and a user may do selection assignment out of this.

[0063] In S204 "key push", it judges whether one which is prepared in the input means 19 of keys is pressed. When neither of the keys is pressed, it progresses to decision of S208 "the completion of a key setting." When one of keys is pressed, it progresses to S206 "memorize key sequence watch", the sequence of the newly inputted key is memorized, and it progresses to the following S208.

[0064] In S208, it judges whether a setup of the sequence of pressing a key was completed. The decision criterion of whether a setup of the sequence of pressing a key was completed may judge that the predetermined count key was pressed, and may judge that termination of a key setup was directed by having pressed

the time-out and the definite predetermined key. It waits to progress to S210 "search mode initiation", when it is judged that a key setup was completed, to branch to S204, when the key setup is not completed, and to press the following key.

[0065] In S210, the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started. If the retrieval signal with which the electronic camera 10 was outputted from the communication terminal 40 by the following decision of S212 "those connectable with a device" is received, an electronic camera 10 will start reception and the processing for newly joining a communication network and performing a connection handshake in the address of a proper from a communication terminal 40, in order to establish a communication link. At this time, information, such as communicating for the display means 32, a partner's connection device, and a device name of a communication terminal, may be displayed, and a user may do selection assignment of the desired device out of this.

[0066] In the following S214 "key sequence watch reception", processing which waits to transmit the information on key sequence watch that the user inputted with the assignment means 48 of a communication terminal 40 is performed. If key sequence watch is received, it will progress to the following decision of S216

"sequence coincidence."

[0067] Processing which compares the sequence of a key that the information processing means 14 was inputted with the electronic camera 10 with the key sequence watch received from the communication terminal 40 by S216 is performed, when key sequence watch is not in agreement, it branches to S218 "an inequality reply", and the command which shows that the sequence which pressed the key to the communication terminal 40 differs is transmitted, and it progresses to S226 "END." When key sequence watch is in agreement by S216, it progresses to S220 "a coincidence reply", and the command which shows that key sequence watch is in agreement to a communication terminal 40 is transmitted, and it progresses to S222 "connection authorization reception."

[0068] In S222, processing which waits for a "connection authorization" signal with an electronic camera 10 to come by wireless from a communication terminal 40 is performed. When the loop formation of S222 is carried out when there is "no connection authorization", and there is "connection authorization", it progresses to the following S224 "authentication procedure", and the communication link about authentication procedure is carried out. And connection processing with a communication terminal 40 is completed by S226 "END", and it returns to the original program routine.

[0069] On the other hand, in the processing program of a communication

terminal 40, if an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to S230 "START." In the following S232 "search mode initiation", CPU62 emits the electric wave which starts the transceiver means 58 and includes a retrieval signal from the radio means 44, and starts the processing which looks for a connection device. If the retrieval signal with which the communication terminal 40 was outputted from the electronic camera 10 by the following decision of S234 "those connectable with a device" is received, in order to establish a communication link, a communication terminal 40 will recognize the electronic camera 10 which newly joined the network of radio, will distribute the address of a proper, and will start the processing for performing a connection handshake.

[0070] At subsequent steps, the processing which inputs the information equivalent to ID used in order that a user may specify a connection device and may establish a communication link is started. At this time, the setting meaning, the setting approach, and a procedure may be displayed on the display means 32, and a user may do selection assignment out of this.

[0071] In S236 "key push", it judges whether one which is prepared in the assignment means 48 of keys is pressed. When neither of the keys is pressed, it progresses to decision of S240 "the completion of a key setting." When one of

keys is pressed, it progresses to S238 "memorize key sequence watch", the sequence of the newly inputted key is memorized, and it progresses to the following S240.

[0072] In S240, it judges whether a setup of the sequence of pressing a key was completed. The decision criterion of whether a setup of the sequence of pressing a key was completed may judge that the predetermined count key was pressed, and may judge that termination of a key setup was directed by having pressed the time-out and the definite predetermined key. It waits to progress to S242 "key sequence watch transmission", when it is judged that a key setup was completed, to branch to S236, when the key setup is not completed, and to press the following key.

[0073] In S242, processing which transmits the inputted key sequence watch to the electronic camera 10 which is a connection device is performed, and it progresses to the following decision of S244 "coincidence reception." In S244, the judgment result of the key sequence watch transmitted to the electronic camera 10 is received and judged, and processing which changes the branching place of processing of a communication terminal 40 is performed. When the contents of the received command are "inequalities", it branches to S250 "END", and when the received command is "coincidence", it progresses to the following S246 "connection authorization transmission."

[0074] In the following S246 "connection authorization transmission", the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, and establish mutual authentication by S248 "authentication procedure."

[0075] If the above-mentioned authentication procedure is completed, connection processing with an electronic camera 10 will be completed by S250 "END", and it returns to the original program routine.

[0076] The information on the key sequence watch of a push lever is transmitted to an electronic camera 10 on the key sequence watch which set up beforehand the key prepared in the communication terminal 40 as mentioned above with the electronic camera 10, and a letter is answered in a decision result in agreement with the sequence which this key sequence watch set up beforehand, and an electronic camera 10 can establish a communication link while recognizing mutual, when a communication terminal 40 receives this information and it is in agreement. Moreover, the sequence of pressing a key is good to set up intelligible sequence as a cross-joint key is pressed in order of "**, ->, **, <-." Moreover, the key to operate is good also as a command which is not limited to a specific key, presses keys which are different when it was one or more predetermined actuation keys two or more times, and performs mutual

recognition.

[0077] The flow chart of the gestalt of other operations at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 8 is shown.

[0078] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to S300 "START." In the following S302 "search mode initiation", the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started.

[0079] If the retrieval signal with which the electronic camera 10 was outputted from the communication terminal 40 by decision of S304 "those connectable with a device" is received, an electronic camera 10 starts reception and the processing for newly joining a communication network and performing a connection handshake in the address of a proper from a communication terminal 40, in order to establish a communication link. Identification information, such as communicating for the display means 32 at this time, a partner's connection device, and a device name of a communication terminal, may be displayed, and a user may do selection assignment out of this.

[0080] In S306 "connection-confirm reception", processing which waits to transmit the "connection-confirm" signal over an electronic camera 10 by wireless from a communication terminal 40 is performed. When a "connection confirm" is not transmitted, it returns to S306 again and the loop formation of S306 is carried out, when the "connection confirm" has been transmitted, it progresses to the following processing of S308 "a buzzer is sounded", and a buzzer is sounded with fixed spacing to a communication terminal 40. When a connection device is an electronic camera 10, the buzzer 13 used for a self-timer etc. is sounded and notified.

[0081] In the following S310 "a buzzer check", processing which waits to receive the "buzzer check" information which shows that the communication terminal 40 received the audible tone which the electronic camera 10 emitted is performed. When it returns to S310 again and loop-formation processing is performed, when "a buzzer check" is not received, and "a buzzer check" is received, "a buzzer reply" which shows that it progressed to S312 "a buzzer reply", and "the buzzer check" was received to the communication terminal 40 is transmitted.

[0082] And by the following decision of S314 "connection authorization reception", when "connection authorization" is not received from a communication terminal 40, the loop formation is again returned and carried out to S314, when "connection authorization" is received from a communication

terminal 40, it progresses to the following S316 "authentication procedure", and the communication link about authentication procedure is carried out. And communication link connection processing with a communication terminal 40 is completed by S318 "END", and it returns to the original program routine.

[0083] On the other hand, in the processing program of a communication terminal 40, an electronic camera 10 and a communication terminal 40 recognize this to go into a communication link within the circle to each other, and the program of a communication terminal 40 branches to S320 "START." In the following S322 "search mode initiation", CPU62 emits the electric wave which includes a retrieval signal from the radio means 44, and starts the processing which looks for a connection device. At this time, information, such as information, such as a device name of the electronic camera 10 which is communicating, and a connection device name which exists in other communication link within the circle possible [a communication link], may be displayed, and a user may do selection assignment of the desired device.

[0084] If the retrieval signal with which the communication terminal 40 was outputted from the electronic camera 10 by decision of S324 "those connectable with a device" is received, in order to establish a communication link, a communication terminal 40 recognizes the communication terminal 40 which joined a new communication network, distributes the address of a proper, and

starts the processing for performing a connection handshake.

[0085] In decision of S326 "start key push", it judges whether the start key prepared in the assignment means 48 was pushed. This start key may be a start key of dedication, and may assign the "** key" of the cross-joint key 8. When the "start key" is not pushed, the loop formation is again returned and carried out to S326, and when a "start key" is pushed, it progresses to the following S328 "connection-confirm transmission."

[0086] In the following S328, the command "a connection confirm" which shows that a communication link is established from a communication terminal 40 to an electronic camera 10 by wireless is transmitted, and it progresses to the following decision of S330 "audible tone detection." When the audible tone which the electronic camera 10 emitted by S330 is not detected, the loop formation is again returned and carried out to S330. When the audible tone which the electronic camera 10 emitted by S330 is detected, it progresses to S332 "buzzer check transmission", and the information which shows that the audible tone was received to the electronic camera 10 is transmitted. And it progresses to the following S334 "a buzzer reply."

[0087] In S334, the "buzzer reply" information transmitted with ten electronic cameraS312 is received, when "a buzzer reply" is not received, it branches to S340 "END", and when "a buzzer reply" is received, it progresses to the

following S336 "connection authorization transmission."

[0088] In the following S336 "connection authorization transmission", the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, and establish mutual authentication by S338 "authentication procedure."

[0089] If the above-mentioned authentication procedure is completed, connection processing with an electronic camera 10 will be completed by S340 "END", and it returns to the original program routine.

[0090] As mentioned above, if a desired connection device is chosen from the information on the connection device currently displayed on the communication terminal 40, it will be asked whether the audible tone was emitted from the this chosen connection device, the microphone 52 of a communication terminal 40 detected this audible tone, and the communication terminal 40 has sounded the buzzer to the device which exists in communication link connection within the limits through radio. If the reply of the purport which has emitted the audible tone is received, procedure of mutual recognition can be performed, and a communication link can be established. Moreover, when the audible tone is emitted from two or more connection devices, you may make it establish the connection device and communication link put close to a communication

terminal 40.

[0091] The flow chart of the gestalt of other operations at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 9 is shown.

[0092] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to S400 "START." In the following S402 "search mode initiation", the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started.

[0093] And it progresses to S406 "a connection-confirm graphic form", after progressing to the following S404 "stroboscope prohibition and macro position movie through" and setting up the mode of operation of an electronic camera 10. A user photos the "connection-confirm graphic form" currently displayed on the display means 46 of a communication terminal 40 with the electronic camera 10 by the following S406, and an electronic camera 10 photos a display pattern and the flashing condition of a display, and recognizes a communication terminal 40.

[0094] When the "connection-confirm graphic form" has been recognized by S406, it progresses to the following S408 "a movie through halt", and the movie

through mode set up by said S404 is stopped. And the information which shows that the graphic form currently displayed on the display means 46 to the communication terminal 40 by S410 "graphic form check transmission" was checked is transmitted, and it progresses to the following S412 "connection authorization reception."

[0095] By the following decision of S412 "connection authorization reception", when "connection authorization" is not received from a communication terminal 40, it returns to S412 again and the loop formation of S412 is carried out, when "connection authorization" is received from a communication terminal 40, it progresses to the following S414 "authentication procedure", and the communication link about authentication procedure is carried out. And communication link connection processing with a communication terminal 40 is completed by S416 "END", and it returns to the original program routine.

[0096] On the other hand, in the processing program of a communication terminal 40, an electronic camera 10 and a communication terminal 40 recognize this to go into a communication link within the circle to each other, and the program of a communication terminal 40 branches to S420 "START." In the following S422 "search mode initiation", CPU62 emits the electric wave which includes a retrieval signal from the radio means 44, and starts the processing which looks for a connection device. At this time, information, such as

information, such as a device name of the electronic camera 10 which is communicating, and a connection device name which exists in other communication link within the circle possible [a communication link], may be displayed, and a user may do selection assignment of the desired device out of this.

[0097] If retrieval of a connection device is completed, it progresses to the following S424 "a connection-confirm graphic display", and a predetermined display pattern will be displayed on the display means 46, and it will progress to the following S426 "check detection." In S426, processing which waits for the "graphic form check" signal transmitted from an electronic camera 10 is performed. When "the graphic form check" is not received by S426, a program returns to S426 again, the loop formation is performed, and when "a graphic form check" is received, it progresses to the following S428 "connection authorization transmission."

[0098] In the following S428, the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, and establish mutual authentication by S430 "authentication procedure."

[0099] If the above-mentioned authentication procedure is completed,

connection processing with an electronic camera 10 will be completed by S432 "END", and it returns to the original program routine.

[0100] The condition that the electronic camera 10 is photoing the "check graphic form" currently shown to drawing 10 by the display means 46 of a communication terminal 40 is shown.

[0101] A communication link is establishable while performing procedure of consensual validation by setting the mode of an electronic camera 10 as check mode automatically, and recognizing the "check graphic form" currently displayed on the display means 46 of a communication terminal 40, as shown in this drawing. A check graphic form may be the pattern of an alphabetic character, and may be the pattern of a graphic form.

[0102] The flow chart of the gestalt of other operations at the time of the electronic camera 10 and communication terminal 40 which were shown in drawing 11 at drawing 9 establishing a communication link is shown. Although the symptom of the connection shown in drawing 9 is based on "image measuring", the symptom of the connection shown in drawing 11 is based on "flashing period recognition."

[0103] Only a different part from the flow chart shown in drawing 9 gives explanation of the flow chart of this drawing, and the part of the same processing is omitted.

[0104] The difference with the processing program of the electronic camera 10 shown in drawing 9 is a point of having photoed "the connection-confirm flashing display" currently displayed on the display means 46 by S407 "the flashing period for a check", and recognizing the period of flashing, instead of photoing the display pattern and the flashing condition of a display which were carried out by S406 "a connection-confirm graphic form" of drawing 9 and which are displayed on the display means 46, and recognizing a communication terminal 40. Subsequent processings are performed like the processing shown in drawing 9 .

[0105] Moreover, the difference with the processing program of a communication terminal 40 shown in drawing 9 is having added the processing suspended with the point it was made to blink a display with a predetermined period, and the display which blinked by S427 "a flashing halt" S425 to check detection of S426 by S425 "a connection-confirm flashing display" instead of displaying a "connection-confirm graphic form" by S424 "a connection-confirm graphic display" of drawing 9 .

[0106] By recognizing the flashing period currently displayed on the above-mentioned display means 46, while performing procedure of consensual validation, a communication link is establishable. The display of check flashing may be the pattern of an alphabetic character, and may be the pattern of a

graphic form.

[0107] The flow chart of the gestalt of other operations at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 12 is shown.

[0108] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to S500 "START." In the following S502 "search mode initiation", the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started.

[0109] And in the following S504 "oscillating monitor initiation", the processing which supervises the oscillating data which enable the oscillating detection means 15 and are outputted from the oscillating detection means 15 is started. In the following S506 "impact detection", it judges whether the impact resistance value generated when the oscillating data outputted from the oscillating detection means 15 are supervised serially and an electronic camera 10 and a communication terminal 40 contact has been recognized as vibration. When the impact is not being detected, a loop formation is again returned and carried out to S506, when an impact is detected, it progresses to the following S508 "an

oscillating monitor halt", and it cancels enabling [of the oscillating detection means 15], and the monitor of oscillating data is stopped.

[0110] In the following S510 "impact check transmission", processing which transmits the "impact check" information which shows that the impact was detected to a communication terminal 40 is performed, and it progresses to the following S512 "connection authorization reception."

[0111] By the following decision of S512 "connection authorization reception", when "connection authorization" is not received from a communication terminal 40, the loop formation which returns to S512 again is performed, when "connection authorization" is received from a communication terminal 40, it progresses to the following S514 "authentication procedure", and the communication link about authentication procedure is carried out. And communication link connection processing with a communication terminal 40 is completed by S516 "END", and it returns to the original program routine.

[0112] On the other hand, in the processing program of a communication terminal 40, an electronic camera 10 and a communication terminal 40 recognize this to go into a communication link within the circle to each other, and the program of a communication terminal 40 branches to S520 "START." In the following S522 "search mode initiation", CPU62 emits the electric wave which includes a retrieval signal from the radio means 44, and starts the processing

which looks for a connection device. At this time, information, such as information, such as a device name of the electronic camera 10 which is communicating, and a connection device name which exists in other communication link within the circle possible [a communication link], may be displayed, and a user may choose a desired device out of this.

[0113] If retrieval of a connection device is completed, it progresses to the following S524 "a microphone input monitor", and the processing which supervises the impulsive sound serially inputted from a microphone 52 will be started, and it will progress to the following S526 "impulsive-sound detection", and will judge whether a predetermined frequency or the impulsive sound more than sound volume was detected. When it is judged that the microphone input has not detected impulsive sound, loop-formation processing which returns to S526 again is performed, and when it is judged that the microphone input detected impulsive sound, it progresses to S528 "impact check detection."

[0114] In the following S528 "impact check detection", it judges whether there was any transmission of a "impact check" from an electronic camera 10. When it is judged from an electronic camera 10 that there was no transmission of a "impact check", loop-formation processing which returns to S528 again is performed, and when it is judged that there was transmission of a "impact check", it progresses to S530 "connection authorization transmission."

[0115] In the following S530, the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, and establish mutual authentication by S532 "authentication procedure."

[0116] If the above-mentioned authentication procedure is completed, connection processing with an electronic camera 10 will be completed by S534 "END", and it returns to the original program routine.

[0117] As mentioned above, an electronic camera 10 is automatically set as the mode of an impact check, and if an electronic camera 10 and a communication terminal 40 are contacted to extent which a contact sound generates lightly, an electronic camera 10 can detect the impact by contact with the oscillating detection means 15, and a communication terminal 40 can perform procedure of mutual recognition, and can establish a communication link while it detects a contact sound with a microphone 52. Moreover, the sensor for the blurring detection at the time of photography may be used for the detection means of contact, change of conductivity and change of electrostatic capacity may be detected for it, and you may make it detect change of the distance of an electronic camera 10 and a communication terminal 40 for it using an automatic focus means.

[0118] The flow chart of the gestalt of other operations at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 13 is shown.

[0119] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be recognized, and the program of an electronic camera 10 will branch to S600 "START." In the following S602 "search mode initiation", the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started. If the retrieval signal with which the electronic camera 10 was outputted from the communication terminal 40 is received, an electronic camera 10 starts reception and the processing for newly joining a communication network and performing a connection handshake in the address of a proper from a communication terminal 40, in order to establish a communication link. At this time, information, such as communicating for the display means 32, a partner's connection device, and a device name of a communication terminal 40, may be displayed, and a user may do selection assignment of the desired communications partner out of this.

[0120] In S604 "a product name demand", processing which waits for the Request to Send of attributes, such as a product name of an electronic camera

10, to come by wireless from a communication terminal 40 is performed. When there is "no product name demand", a loop formation is again branched and carried out to S604, when there is "a product name demand", it progresses to the following S606 "product name transmission", and the information about the product name of an electronic camera 10 is transmitted.

[0121] In the following S608 "connection authorization reception", processing which waits for wireless to receive "connection authorization" with an electronic camera 10 from a communication terminal 40 is performed. When the loop formation is again branched and carried out to S608 when there is "no connection authorization", and there is "connection authorization", it progresses to the following S610 "authentication procedure", and the communication link about authentication procedure is carried out. And connection processing with a communication terminal 40 is completed by S612 "END", and it returns to the original program routine.

[0122] On the other hand, in the processing program of a communication terminal 40, an electronic camera 10 and a communication terminal 40 recognize this to go into a communication link within the circle to each other, and the program of a communication terminal 40 branches to S620 "START." In the following S622 "search mode initiation", CPU62 emits the electric wave which includes a retrieval signal from the radio means 44, and starts the processing

which looks for a connection device. At this time, information, such as information, such as a device name of the electronic camera 10 which is communicating, and a connection device name which exists in other communication link within the circle possible [a communication link], may be displayed, and a user may do selection assignment of the desired device.

[0123] In S624 "product name demand transmission", it is required that attributes, such as a product name, should be transmitted to an electronic camera 10 by wireless from a communication terminal 40. And in the following S626 "product name reception", processing which waits for reception of the information about the product name of the electronic camera 10 emitted from an electronic camera 10 is performed. When the loop formation is again branched and carried out to S626 when reception of a "product name" is not performed, and there is reception of a "product name", it progresses to S628 "a product name display."

[0124] In the following S628 "a product name display", identification information stored in the display means 46 at PROM64, such as an appearance of a connection device and a name, is displayed.

[0125] The presenting 45 of the identification information of the connection device displayed on drawing 14 by the display means 46 of a communication terminal 40 is shown.

[0126] According to this drawing, the cell remaining capacity display 82 which

shows the remaining capacity of the cell which is the power source of a communication terminal 40, the received radio-field-intensity display 84 which displays the received radio field intensity of wireless, the name display 86 of a connection device, 86 --, and the inverse video 88 at the time of choosing the electronic camera 10 which is a connection device are displayed on the display means 46 of a communication terminal 40.

[0127] In the following S630 "** key push", it judges whether the "** key" prepared in the assignment means 48 is pressed. When the "** key" is pressed, it progresses to S632 "Display UP", and the inverse video 88 currently displayed on the display means 46 is moved to the name display 86 of the connection device on one. And if migration of inverse video 88 is completed, it will progress to S638 "setting key push."

[0128] When it is judged that the "** key" is not pressed by S630, it progresses to the following decision of S634 "** key push", and judges whether the "** key" prepared in the assignment means 48 here is pressed. When the "** key" is pressed, it progresses to S636 "Display DOWN", and the inverse video 88 currently displayed on the display means 46 is moved to the name display 86 of the connection device under one, and a connection device is specified. And if migration of inverse video 88 is completed, it will progress to S638 "setting key push."

[0129] In S638, it judges whether the "setting key" prepared in the assignment means 48 is pressed. When it is judged that the "setting key" is not pressed by S638, it branches to former S630 "** key push." When a "setting key" is pressed, it progresses to S640 "a connection device setup", and a setup of the constant about the model of connection device, a flag, and a parameter is carried out.

[0130] In the following S642 "connection authorization transmission", the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, establish mutual authentication by S644 "authentication procedure", and continue a communication link henceforth.

[0131] If the above-mentioned authentication procedure is completed, connection processing with an electronic camera 10 will be completed by S646 "END", and it returns to the original program routine.

[0132] As mentioned above, if it is set as the mode of a check of an electronic camera 10 and goes into a communication link within the circle with a communication terminal 40, a device name connectable with the display means 46 of a communication terminal 40 will be displayed, if a user does selection assignment of the connection device using the assignment means 48, such as a cross-joint key, procedure of mutual recognition can be performed and a

communication link can be established.

[0133] The flow chart of the gestalt of other operations at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 15 is shown.

[0134] The gestalt of operation of drawing 15 makes it possible to add the refusal setting mode against connection to the program of a communication terminal 40 shown in drawing 13 , and to specify prohibition of connection of radio as it. Therefore, explanation of the same flow as the flow explained with the gestalt of operation of drawing 13 is omitted, and is explained below only about a different flow.

[0135] After the authentication procedure of an electronic camera 10 and a communication terminal 40 is completed by S644 "authentication procedure", it progresses to the following S650 "refusal setting mode."

[0136] In S650, it judges whether the mode of a refusal setup was specified from the assignment means 48. In addition, it is good for the display means 46 at this time to notify a user of the setting meaning, the setting approach, and a procedure. When refusal setting mode is not specified by S650, it progresses to S650 again and loop-formation processing is performed, when refusal setting mode is specified, it progresses to the following S652 "refusal setting display initiation", and identification information stored in the display means 46 at

PROM64, such as an appearance of a connection device and a name, is displayed.

[0137] The presenting 45 of the identification information of the connection device displayed on drawing 16 by the display means 46 of a communication terminal 40 is shown.

[0138] According to this drawing, the cell remaining capacity display 82 which shows the remaining capacity of the cell which is the power source of a communication terminal 40, the received radio-field-intensity display 84 which displays the received radio field intensity of wireless, the name display 86 of a connection device, the inverse video 88 at the time of choosing the electronic camera 10 which is a connection device, and the connection-refusal instrument display 90 by which the name of a connection-refusal device is surrounded by the frame are displayed on the display means 46 of a communication terminal 40.

[0139] In the following S654 "** key push", it judges whether the "** key" prepared in the assignment means 48 is pressed. When the "** key" is pressed, it progresses to S656 "Display UP", and the connection-refusal instrument display 90 currently displayed on the display means 46 is moved to the name display 86 of the connection device on one. And if migration of the connection-refusal instrument display 90 is completed, it will progress to S662 "setting key push."

[0140] When it is judged that the "** key" is not pressed by S662, it progresses to the following decision of S658 "** key push", and judges whether the "** key" prepared in the assignment means 48 here is pressed. When the "** key" is pressed, it progresses to S660 "Display DOWN", and the connection-refusal instrument display 90 currently displayed on the display means 46 is moved to the name display 86 of the connection device under one, and a connection-refusal device is specified. And if migration of the connection-refusal instrument display 90 is completed, it will progress to S662 "setting key push."

[0141] In S662, it judges whether the "setting key" prepared in the assignment means 48 is pressed. When it is judged that the "setting key" is not pressed by S662, it branches to former S654 "** key push." It sets up not making communication link connection with the connection device specified by progressing to S664 "a refusal device setup" when a "setting key" is pressed, progresses to the following S666 "END", and returns to the original program routine.

[0142] The flow chart of the gestalt of other operations at the time of an electronic camera 10 and a communication terminal 40 establishing a communication link to drawing 17 is shown.

[0143] If an electronic camera 10 and a communication terminal 40 go into each other a communication link within the circle, as for each other device, this will be

recognized, and the program of an electronic camera 10 will branch to S700 "START." In the following S702 "search mode initiation", the electric wave which includes a retrieval signal from an antenna 30 by the command of the information processing means 14 is emitted, and the processing which searches for a communication terminal 40 is started.

[0144] If the retrieval signal with which the electronic camera 10 was outputted from the communication terminal 40 by decision of S704 "those connectable with a device" is received, an electronic camera 10 starts reception and the processing for newly joining a communication network and performing a connection handshake in the address of a proper from a communication terminal 40, in order to establish a communication link. Identification information, such as communicating for the display means 32 at this time, a partner's connection device, and a device name of a communication terminal, may be displayed, and a user may do selection assignment of the desired device from this inside.

[0145] In S706 "connection-confirm reception", processing which waits to transmit the "connection-confirm" signal over an electronic camera 10 by wireless from a communication terminal 40 is performed. When a "connection confirm" is not transmitted, it returns to S706 again and the loop formation of S706 is carried out, and when the "connection confirm" has been transmitted, it progresses to the following processing of S708 "connection initiation

transmission."

[0146] In the following S708 "connection initiation transmission", in order to perform mutual recognition from an electronic camera 10 automatically to a communication terminal 40, the demand command for performing "connection initiation" is transmitted, and it progresses to decision of S714 "connection authorization reception."

[0147] By S714 "connection authorization reception" decision, when "connection authorization" is not received from a communication terminal 40, the loop formation which returns S714 again is performed, when "connection authorization" is received from a communication terminal 40, it progresses to the following S716 "authentication procedure", and the communication link about authentication procedure is carried out. And communication link connection processing with a communication terminal 40 is completed by S718 "END", and it returns to the original program routine.

[0148] On the other hand, in the processing program of a communication terminal 40, an electronic camera 10 and a communication terminal 40 recognize this to go into a communication link within the circle to each other, and the program of a communication terminal 40 branches to S720 "START." In the following S722 "search mode initiation", CPU62 emits the electric wave which includes a retrieval signal from the radio means 44, and starts the processing

which looks for a connection device. At this time, information, such as information, such as a device name of the electronic camera 10 which is communicating, and a connection device name which exists in other communication link within the circle possible [a communication link], may be displayed, and a user may do selection assignment of the desired communications partner out of this.

[0149] If the retrieval signal with which the communication terminal 40 was outputted from the electronic camera 10 by decision of S724 "those connectable with a device" is received, in order to establish a communication link, a communication terminal 40 recognizes the communication terminal 40 which joined a new communication network, distributes the address of a proper, and starts the processing for performing a connection handshake.

[0150] In the following S728, the command "a connection confirm" which shows that a communication link is established from a communication terminal 40 to an electronic camera 10 by wireless is transmitted, and it progresses to the following S730 "connection initiation reception." In S730, processing which waits to transmit the demand command of "connection initiation" from a communication terminal 40 is performed. When ten transmits the command which requires "connection initiation" with an electronic cameraS708 "connection initiation transmission" and a communication terminal 40 receives this, it

progresses to S732 "connection authorization transmission" from S730.

[0151] In S732 "connection authorization transmission", the enabling signal of communication link connection is transmitted from a communication terminal 40 to an electronic camera 10. After that, an electronic camera 10 and a communication terminal 40 communicate mutually, and establish mutual authentication by S734 "authentication procedure."

[0152] If the above-mentioned authentication procedure is completed, a communication terminal 40 will sound a ringer tone with S736"ringer tone ******" from a loudspeaker 50, and will notify a user of communicative connection having been established. And it progresses to the following S136 "END", connection processing with an electronic camera 10 is completed, and it returns to the original program routine.

[0153] Although the example which notified the user of the communication link with an electronic camera 10 and a communication terminal 40 having been established to the sound emitted from a loudspeaker 50 explained in above-mentioned explanation, this invention is not limited to this and lighting of a display and a display, flashing, vibration, etc. may inform a user of it.

[0154] The flow chart of the gestalt of other operations at the time of the electronic camera 10 and communication terminal 40 which were shown in drawing 18 at drawing 17 establishing a communication link is shown. Although

it will continue having the authorization code of an electronic camera 10 when a communication link is established by the approach shown in drawing 17 , by the approach shown in drawing 18 , a setup in "one time mode" is enabled after communicative establishment, and it is characterized by forming the mode in which restrict mutual recognition once and it is performed. commercial information etc. is needed when this "one time mode" is set up -- if it restricts once, it connects and information is transmitted, when a next communication link is unnecessary, it is effective, and unnecessary connection processing can be prevented henceforth.

[0155] Only a different part from the flow chart shown in drawing 17 gives explanation of the flow chart of this drawing, and the part of the same processing is omitted.

[0156] The difference with the processing program of the electronic camera 10 shown in drawing 17 is the setting part in one time mode after S734 "authentication procedure" of drawing 17 . After the authentication procedure of an electronic camera 10 is completed by S734, it progresses to the decision which sets up S740 "one time mode." Here, the purport which sets "one time mode" as the display means 46 of a communication terminal 40 is displayed, and a user sets up "one time mode" using the assignment means 48. In setting up "one time mode" by S740, it progresses to S742 "it is a prohibition setup

about an authorization code", and a setup of which an authorization code is canceled after a first-time communication link is performed, and it progresses to S744 "END." In not setting up "one time mode" by S740, connection processing with direct progress and an electronic camera 10 is completed to S744 "END", and it returns to the original program routine.

[0157] The flow chart of which the "one time mode" in a communication terminal 40 is continued or canceled to drawing 19 is shown.

[0158] If continuation in "one time mode" or a setup of discharge is specified, a program will be jumped to S750 "START." In the following S752 "one time discharge mode", it judges whether assignment by a user's input is "one time discharge." In not being "one time discharge", it branches to S756 "END", and in being "one time discharge", processing which progresses to S754 "forbidden authorization code revival", revitalizes the authorization code which carried out a prohibition setup by S742 of drawing 18 , and establishes a communication link is performed, and it returns to the original program routine.

[0159] The flow chart of the gestalt of other operations at the time of the electronic camera 10 and communication terminal 40 which were shown in drawing 20 at drawing 17 establishing a communication link is shown. Although a communication terminal 40 will emit a ringer tone and connection will be recognized if a communication link is established with the connection method

shown in drawing 17 , in the connection method shown in drawing 20 , after the 1st communicative connection, a common key is used in the case of authentication procedure, and it considers as a user's recognition information at it, and in the case of the authentication procedure after the 2nd communication link connection, the key of a proper is published and it carries out as a user's recognition information.

[0160] Since the processing program of the electronic camera 10 shown in drawing 20 and the flow shown in drawing 17 are the same, explanation is omitted.

[0161] Only a different part from the flow chart shown in drawing 17 gives explanation of the flow chart of the communication terminal 40 of drawing 20 , and the part of the same processing is omitted. If a communication terminal 40 transmits "connection authorization" to an electronic camera 10 by S732 "connection authorization transmission", a program will progress to the following decision of S760 "the 1st connection." In S760, it judges whether this connection is the 1st connection (first time). Communicative connection is established, only when a "common key" is published and a common key is pressed, while progressing to S762 "authentication procedure common key issue" and performing authentication procedure to an electronic camera 10, when this connection is the 1st time. If processing of S762 is completed, it will progress to

the following S764 "END", and will return to the original program routine.

[0162] When this connection is not the 1st time, it progresses to decision of S766 "the 2nd connection", and communicative connection is established, only when a "proper key" is published and the key of a proper is pressed, while progressing to S768 "authentication procedure proper key issue" and performing authentication procedure to an electronic camera 10, when it is judged in S766 that this connection is the 2nd time. If processing of S768 is completed, it will progress to the following S764 "END", and will return to the original program routine.

[0163] When it is judged in S766 that this connection is not the 2nd time, it progresses to S772 "proper key ?" (when it is connection of the 3rd henceforth), and judges whether the proper key published by the above-mentioned S768 was pressed. When the pressed key is not a proper key published by S768, it progresses to S764 "END", and it returns to the original subroutine. When the pressed key is a proper key published by S768, it progresses to S772 "authentication procedure", and authentication procedure is performed to an electronic camera 10, and communicative connection is established. If processing of S772 is completed, it will progress to the following S764 "END", and will return to the original program routine.

[0164] By using for discernment the common key and proper key which are

published as mentioned above in the case of connection, it becomes possible to identify a user easily.

[0165]

[Effect of the Invention] According to the connection place selection approach of the wireless LAN which starts this invention as explained above If a connected device and a connection device go into a radio within the circle, a communication link will be started automatically. Said connected device receives the identification information which can specify this connection device from said connection device. Since the wireless connection between this connection device and said connected device was established when the identification information which identifies a connection device was displayed on the display means of said connected device and the desired connection device was specified out of this display It becomes possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate.

[0166] Moreover, since the wireless connection between said connection device and said connected device was established according to how of the key prepared in the connection device, and the key prepared in the connected device to push according to the gestalt of other invention, a desired connection device is chosen from two or more connection devices which exist in the

communication link within the circle of a connected device, and it becomes that it is possible in communicating.

[0167] Moreover, since the wireless connection between said connection device and said connected device established when the predetermined key prepared in the connection device and the predetermined key prepared in the connected device were pressed mostly at the coincidence term according to the gestalt of other invention, a desired connection device chooses from two or more connection devices which exist in the communication link within the circle of a connected device, and it becomes that it is possible in communicating.

[0168] Moreover, since the wireless connection between said connection device and said connected device established when having pushed in order of predetermined [which was able to define beforehand the predetermined key prepared in the connection device, and the predetermined key prepared in the connected device] according to the gestalt of other invention, it becomes that it is possible in choosing and communicating a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device.

[0169] Moreover, since the wireless connection between said connection device and said connected device was established when the connected device received the sound of the connection device proper emitted from a connection device

according to the gestalt of other invention, it becomes that it is possible in choosing a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and communicating.

[0170] Moreover, since a connection device photoed the display currently displayed on the display means of a connected device, the contents of a connected device of a display detected, and a connected device and wireless connection established according to the gestalt of other invention when these contents of a display are the predetermined contents of a display, it becomes that it is possible in choosing and communicating a desired connection device from two or more connection devices which exist to the communication link within the circle of a connected device.

[0171] Moreover, according to the gestalt of other invention, if a connection device and a connected device are contacted, it will become that a desired connection device is chosen from two or more connection devices which exist in the communication link within the circle of a connected device, and said connection device and said connected device can be communicated since mutual is recognized and wireless connection was established.

[0172] Moreover, after according to the gestalt of other invention it will establish wireless connection automatically if a connection device and a connected device

go into the within the circle one which can be communicated, and establishment of this wireless connection is completed Since the user was notified of having emitted a sound, light, or vibration from the notice means formed in the connected device, and wireless connection having been established, it becomes possible to get to know easily that the desired connection device was chosen from two or more connection devices which exist in the communication link within the circle of a connected device.

[0173] Moreover, according to the gestalt of other invention, if a connection device and a connected device go into the within the circle one which can be communicated, a communication link will be started automatically. The common key information which it uses for authentication to said connection device in being the 1st connection is transmitted. Detect that the common key prepared in said connection device and the common key prepared in said connected device were pressed, and wireless connection is established. The predetermined key information that it uses for authentication to said connection device in being the 2nd connection is transmitted. A communication link is continued as information which detects that the predetermined key prepared in said connection device and the predetermined key prepared in said connected device were pressed, and recognizes a user. Since the communication link was continued while detecting that the predetermined key prepared in said connection device and the

predetermined key prepared in said connected device were pressed and having recognized the user, when it is connection of the 3rd henceforth It becomes possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device easily, and to communicate.

[0174] According to the gestalt of other invention, a connection device and a connected device attest mutual with going into the within the circle one which can be communicated automatically, and wireless connection is established. Mutual authentication Moreover, the first-time mode made once into a limitation, Since it carried out as [specify / 2nd henceforth / from an assignment means by which the mode in which mutual authentication was performed was formed by the connected device / a user] While becoming possible to choose a desired connection device from two or more connection devices which exist in the communication link within the circle of a connected device, and to communicate, it becomes possible to prevent an unnecessary communication link.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The perspective view of the electronic camera in which a radio terminal and wireless connection are possible

[Drawing 2] Rear view of an electronic camera

[Drawing 3] The block diagram of an electronic camera

[Drawing 4] The external view of a communication terminal

[Drawing 5] The block diagram of a communication terminal

[Drawing 6] The flow chart at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 7] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 8] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 9] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 10] Drawing showing the condition that the electronic camera is photoing the "check graphic form" currently displayed on the display means of a communication terminal

[Drawing 11] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 12] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 13] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 14] Drawing showing presenting of the connection device information displayed on the display means of a communication terminal

[Drawing 15] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 16] Drawing showing presenting of the connection device information displayed on the display means of a communication terminal

[Drawing 17] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 18] The flow chart which shows the gestalt of other operations at the

time of an electronic camera and a communication terminal establishing a communication link

[Drawing 19] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Drawing 20] The flow chart which shows the gestalt of other operations at the time of an electronic camera and a communication terminal establishing a communication link

[Description of Notations]

2 -- A release carbon button, 4 -- A taking lens, 6 -- Mode switch dial, 8 [-- Image pick-up means,] -- A cross-joint key, 9 -- A finder, 10 -- An electronic camera, 12 13 [-- Image-processing means,] -- A buzzer, 14 -- An information processing means, 15 -- An oscillating detection means, 16 18 [-- Record medium,] -- A frame memory, 19 -- An input means, 20 -- A compression defrosting means, 22 24 -- A record-medium interface, 26 -- Memory, 28 -- Transceiver means, 30 [-- Character generator,] -- An antenna, 32 -- A display means, 34 -- A D/A converter, 36 40 [-- Display,] -- A communication terminal, 42 -- An antenna, 44 -- A radio means, 45 46 [-- Microphone,] -- 48 A display means, 48 -- An assignment means, 50 -- A loudspeaker, 52 54 [-- A transceiver buffer, 62 / -- CPU, 64 / -- PROM, 66 / -- RAM, 82 / -- A cell remaining capacity display, 84 / --

86 A radio-field-intensity display, 86 / -- A name display, 88 / -- Inverse video, 90 / -- Connection-refusal instrument display] -- A radio means, 56 -- A transceiver means, 58 -- A transceiver means, 60